DOE Performance Indicators

for Environment, Safety & Health

Report Period:
April - June 1995

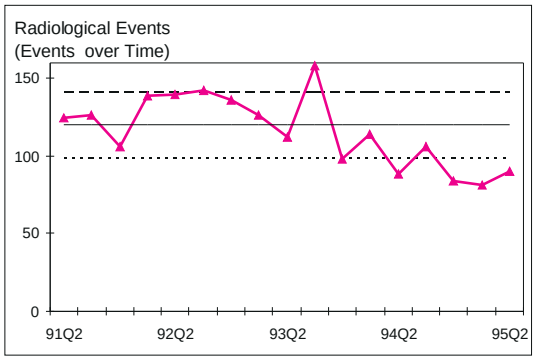
Management Summary

Office of Environment,
Safety and Health

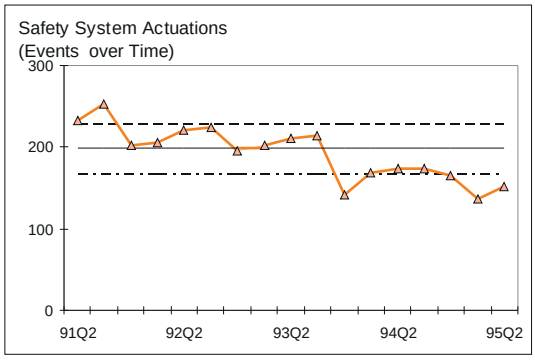
Management Summary

Key indicators selected from the set of DOE Environment, Safety and Health Performance Indicators are summarized below. The horizontal lines on the graphs represent the historical baseline ±1 standard deviation. Quarterly data is presented as calendar quarters.

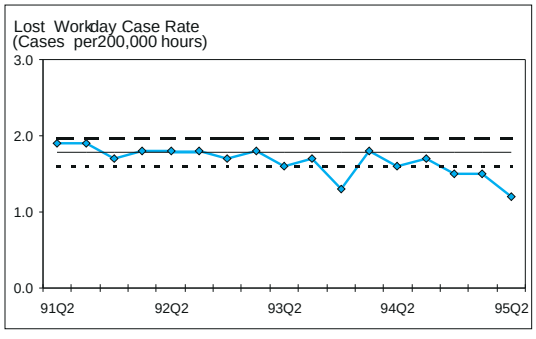
Worker and Facility Safety



Number of reportable radiological events as defined in DOE Order 232.1, *Occurrence Reporting and Processing of Operations Information.* These events are made up of both personnel contaminations and radiation exposures.

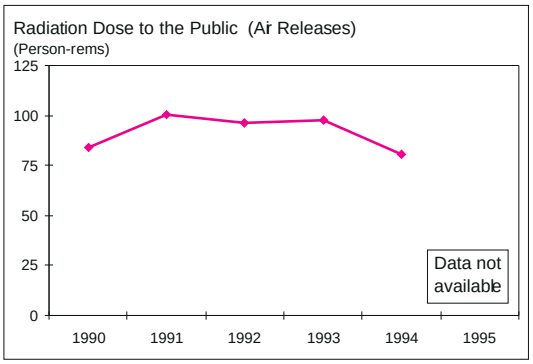


Number of operations-related events determined to be safety system actuations reportable under DOE Order 232.1, *Occurrence Reporting and Processing of Operations Information.*

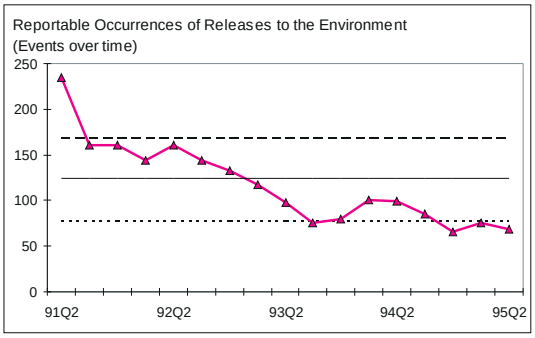


A lost workday case is a work related injury or illness that involves days away from work or days of restricted work activity, or both. Lost Workday Case (LWC) Rate is the number of lost workday cases per 200,000 hours worked.

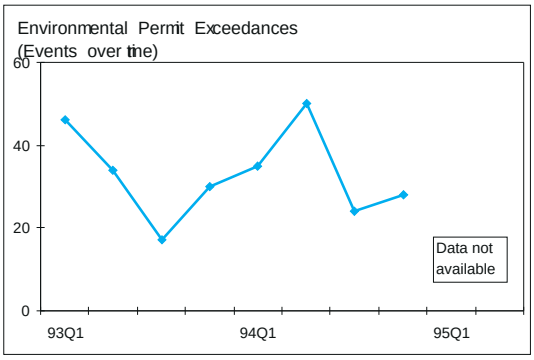
Environment



Total collective radiation dose (person-rem) to the public within 50 miles of DOE facilities due to radionuclide airborne releases. “Collective radiation dose” is the sum of the effective dose equivalent to all off-site people within a 50-mile radius of a DOE facility over a calendar year.

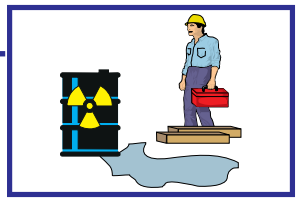


Releases of radionuclides or hazardous substances or regulated pollutants that are reportable to federal, state, or local agencies.

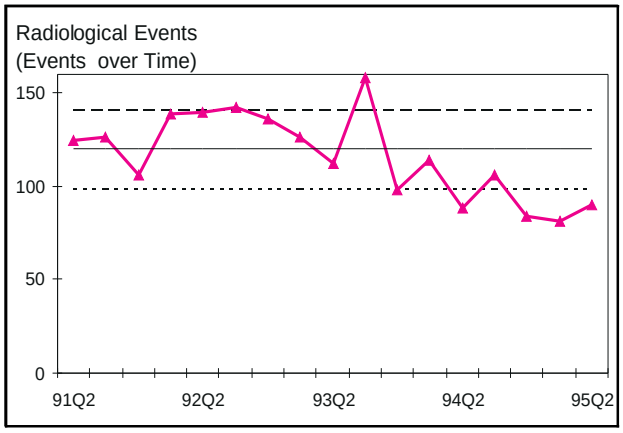


Exceedance of release levels specified in air or water permits during the quarter.

Radiological Events



- Since the first quarter of 1994, radiological events show a very probable decreasing trend.
- CY 1993 is a transition year where a significantly decreasing trend in the number of radiological events is observed. The 28% drop may be attributable to changes in the occurrence reporting Order's (5000.3B) contamination and reporting criteria, significantly reduced levels of DOE operations, and the implementation of the Radiological Control Manual. Each of these, coupled with increased worker awareness relative to radiological controls, helped to establish this positive trend.
- The spike exhibited in the 3rd quarter of 1993 resulted from a change in detection procedures and contamination definition at the Oak Ridge Y-12 Plant, which reported nearly half of the events. Subsequent changes implemented in radiation protection procedures resulted in a substantial reduction in radiation events as Y-12 dropped from being the largest contributor to this indicator to third at present.



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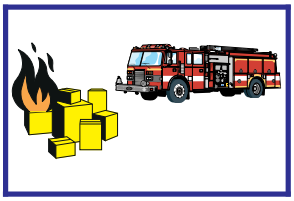
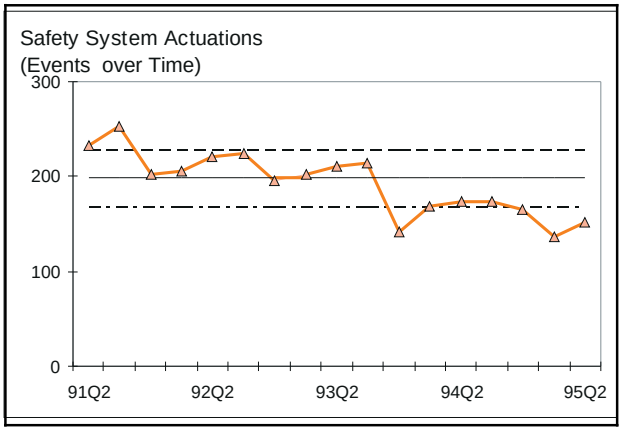
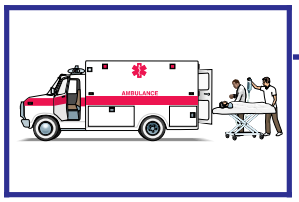
Safety System Actuations



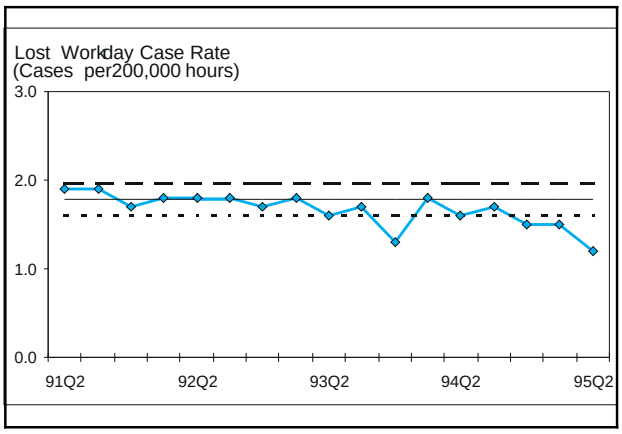
- There is a marked decrease in the number of safety system actuations reported two quarters following the implementation of version B to the occurrence reporting Order 5000.3B. The average of the last seven quarters is more than three standard deviations lower than the average of the first ten quarters. There is no trend evident over the last seven quarters following changes to the reporting criteria and reporting thresholds of DOE Order 5000.3B.
- Overall, approximately 70% of the safety system actuations reported were from false initiators.
- During the 2nd quarter of 1995, the six leading contractors reporting safety system actuations, reported 49% of the actuations from false initiators.
- Fire and smoke alarms were the leading cause of false alarms during the 2nd quarter of 1995. Of the false fire alarms, 20% were the result of improperly performed surveillances, and an additional 20% were the result of inadvertent actuation of hand-pull stations. The major false actuations for the quarter were: Fire/smoke alarm - 25%; Radiation alarm - 17%;Power outage/transient - 12%.



Number of operations-related events determined to be safety system actuations reportable under DOE Order 232.1, *Occurrence Reporting and Processing of Operations Information.* This includes actuation of any safety class equipment or alarm, unplanned electrical outages, unplanned outages of service systems, serious disruption of facility activity related to weather phenomenon, facility evacuations, or loss of process ventilation. These events have the potential to impact the safety and health of workers in the vicinity.

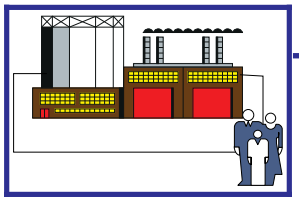


Lost Workday Case Rate

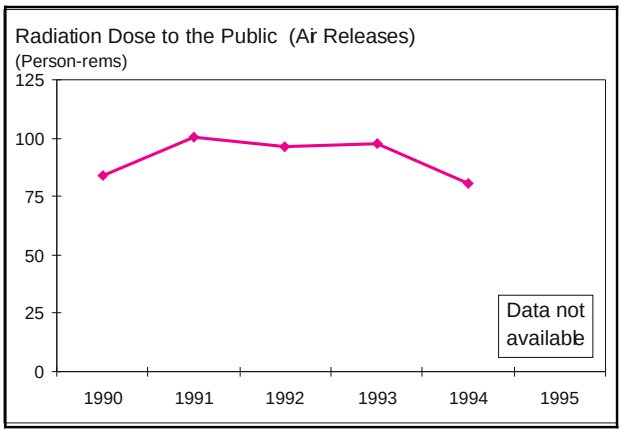


A lost workday case is a work related injury or illness that involves days away from work or days of restricted work activity, or both. Lost Workday Case (LWC) Rate is the number of lost workday cases per 200,000 hours worked.

- The 1994 LWC rate has been relatively constant, even though all four quarters of 1994 and the first two quarters of 1995 fall below the 4-year average (1990-1993) LWC rate. Experience shows that 1994 and 1995 LWC rates will rise due to revisions and late reporting.
- Very general rate comparisons for some operation types can be made to the Department of Labor, Bureau of Labor Statistics private industry classifications. The 1994 DOE construction LWC rate is about one-half the 1993 private sector construction rate; the 1994 DOE production LWC rate is about one-fifth the 1993 private sector manufacturing rate; and the 1994 DOE services LWC rate is approximately four-fifths of the 1993 private sector rate.



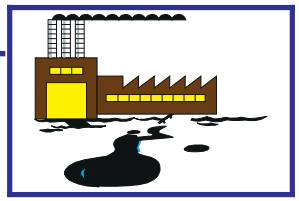
Radiation Dose to the Public



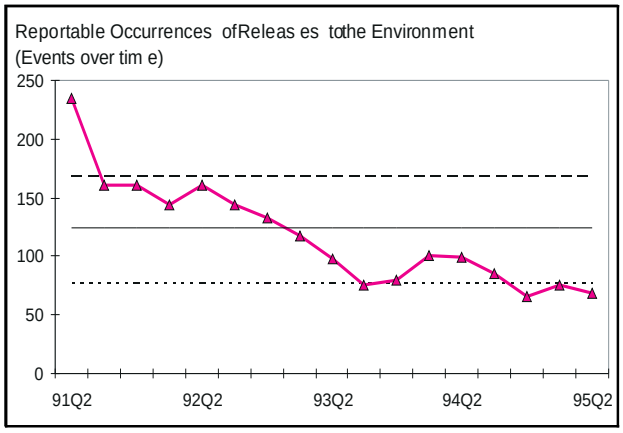
Total collective radiation dose (person-rem) to the public within 50 miles of DOE facilities due to radionuclide airborne releases. “Collective radiation dose” is the sum of the effective dose equivalent to all off-site people within a 50-mile radius of a DOE facility over a calendar year..

- Total collective radiation dose to the public from DOE sources is very low compared to the public dose from natural background radiation, which is approximately 10,000 times greater.
- Over the five years of available data, three sites [Oak Ridge Reservation, Argonne National Laboratory (ANL), and Savannah River Site] consistently account for about two-thirds of the estimated off-site collective radiation dose.
- The overall collective radiation dose decrease in 1994 is due to the lower off-site collective doses at these three sites. The decreases resulted primarily from the reduction in weapons production and development activities at Oak Ridge and Savannah River. ANL reductions resulted mostly from the decrease in Thorium-232 inventory in Building 200 which reduced Radon-220 emissions.
- In 1994, Lawrence Livermore Site 300 (LLNL-300) was also a significant contributor to the total collective radiation dose as a result of more comprehensive estimates of its diffuse emissions.

Reportable Occurrences of Releases to the Environment



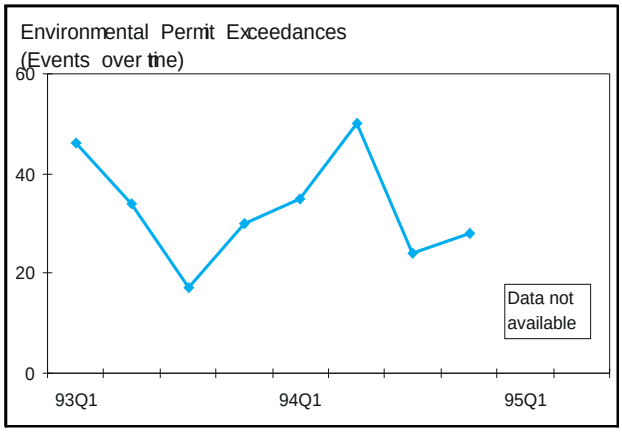
- The number of reportable release incidents has generally decreased over the entire seventeen-quarter period displayed. The decline is also notable over the most recent ten-quarter period following the latest change to DOE's reporting criteria implemented by DOE Order 5000.3B, *Occurrence Reporting and Processing of Operations Information*. In general, there have been fewer opportunities for release incidents with the slow down in operations.



Releases of radionuclides or hazardous substances or regulated pollutants that are reportable to federal, state, or local agencies.

Environmental Permit Exceedances

- Approximately 95% of exceedances over this two year period were due to violations of water discharge permit conditions under the Clean Water Act, and 5% were attributed to Clean Air Act permit violations.
- Four facilities (ANL-East, Los Alamos, Portsmouth, and West Valley) consistently account for almost 70% of the total number of exceedances.
- The high number of exceedances that occurred in the first and second quarters of 1993 and 1994 are attributable to several influences. Based on telephone inquiries to high contributing sites, the high number of exceedances are due to the influence of significant variations in temperature, sunlight, precipitation, and biological activity occurring over these quarters. This directly led to increases of violations of several National or State Pollutant Discharge Elimination System (NPDES/SPDES) permit parameters; primarily total suspended solids, BOD, pH, and temperature.



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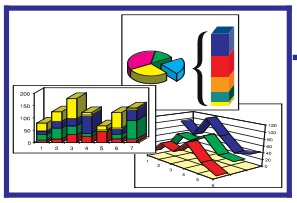

Summary

The following indicators have been selected as DOE performance indicators for worker and facility safety and the environment. Key indicators (identified with *) are summarized in this overview.

Worker and Facility Safety

- Radiological Events *
- Worker Radiation Dose
- Investigations of Serious Events
- Chemical Hazard Events
- Safety System Actuations *
- Procedure Violations
- Safety Equipment Degradation
- Near Misses and Safety Concerns
- Lost Workday Case Rate *
- Lost Workday Incident Rate
- Total Recordable Case Rate
- Occupational Safety & Health Cost Index
- Worker Health
- Spent Nuclear Fuel and Plutonium Vulnerabilities Resolved
- Open DNFSB Recommendations

Environment

- Radiation Dose to the Public *
- Reportable Occurrence of Releases to the Environment *
- Toxic Chemical Releases
- Environmental Permit Exceedances *
- Cited Environmental Violations
- Environmental Fines and Penalties
- Environmental Compliance Milestones Met
- Waste Minimization/Pollution Prevention

A companion report, which includes analysis of all of the indicators, is available. For further information, contact

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